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Free-living marine nematodes from San Julián Bay (Santa Cruz, Argentina)

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Abstract

The free-living marine nematodes of San Julián Bay dataset is based on sediment samples collected in January 2009 during the project PICT AGENCIA-FONCYT 2/33345-2005. A total of 36 samples have been taken at three locations in the San Julián Bay, Santa Cruz Province, Argentina on the coastal littoral at three tidal levels. This presents a unique and important collection for the nematode benthic biodiversity assessment as this area remains one of the least known regions in Patagonia. In total 10,030 specimens of free-living marine nematodes belonging to 2 classes, 9 orders, 35 families, 78 genera and 125 species were collected. The San Julián city site presented a very high species richness.

Keywords

Nematoda, Enoplea, Chromadorea, South Atlantic

Data published through

GBIF: http://www.gbif.org/dataset/06df03fc-8973-490c-af74-089fffae9e24

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Taxonomic coverage description

This is the first study on nematodes performed on a sub-Antarctic salt marsh along the coast of Santa Cruz Province, Argentina with a growing human impact (oil ventures, mining, aquaculture and tourism). The objectives of the study were to collect, identify and discover the structure and diversity of nematode community of San Julián Bay. The coverage (Figure 1) of this dataset includes two classes: Chromadorea (82%) and Enoplea (18%); nine orders: with Monhysterida (36%), followed by Enoplida (15%) and Chromadorida (13%) as those of main occurrences and thirty-five families (see Figure 1).

Taxonomic ranks

Kingdom: Animalia
Phylum: Nematoda
Class: Chromadorea, Enoplea
Order: Monhysterida, Enoplida, Chromadorida, Desmodorida, Araeolaimida, Plectida, Rhabditida, Dorylaimida, Triplonchida
Family: Xyalidae, Linhomoeidae, Monhysteridae, Microlaimidae, Chromadoridae, Comesomatidae, Leptolaimidae, Oncholaimidae, Oxystominidae, Cyatholaimidae, Desmodoridae, Sphaerolaimidae, Diplopeltidae, Dorylaimidae, Ironidae, Neotonchidae, Thoracostomopsidae, Tripyloididae, Tylenchidae, Aegialoalaimidae, Anoplostomatidae, Aphelenchoididae, Axonolaimidae, Enchelidiidae, Ethmolaimidae.
Genera: *Odontophora*, *Hopperia*, *Laimella*, *Sabatieria*, *Campylaimus*, *Chromadora*, *Chromadorella*, *Prochromadora*, *Dichromadora*, *Neochromadora*, *Spilophorella*, *Marylynnia*, *Paracanthonchus*, *Paracyatholaimus*, *Pomponema*, *Paraethmolaimus*, *Gomphionema*, *Neotonchus*, *Halichoanolaimus*, *Molgolaimus*, *Polysigma*, *Spirinia*, *Bolbolaimus*, *Microlaimus*, *Desmolaimus*, *Metalinhomoeus*, *Terschellingia*, *Paralinhomoeus*, *Siphonolaimus*, *Diplolaimella*, *Diplolaimelloides*, *Halomonhystera*, *Monhystera*, *Sphaerolaimus*, *Subsphaerolaimus*, *Amphimonhystera*, *Daptonema*, *Linhystera*, *Metadesmolaimus*, *Paramonohystera*, *Pseudosteineria*, *Steineria*, *Theristus*, *Haliplectus*, *Cyartonema*, *Camacolaimus*, *Deontolaimus*, *Antomicron*, *Leptolaimoides*, *Leptolaimus*, *Paramicrolaimus*, *Mesorhabditis*, *Aphelenchoides*, *Panagrolaimus*, *Boleodorus*, *Tylenchorhynchus*, *Tylenchus*, *Dorylaimus*, *Eudorylaimus*, *Chaetonema*, *Thoracostomopsis*, *Dolicholaimus*, *Syringolaimus*, *Halalaimus*, *Thalassoalaimus*, *Wieseria*, *Calyptronema*, *Adoncholaimus*, *Oncholaimellus*, *Viscosia*, *Oncholaimus*, *Rhabdocoma*, *Bathylaimus*, *Tripyloides*, *Trichodorus*, *Pandolaimus*.
Species with higher occurrences: *Paraethmolaimus dahli*, *Sabatieria mortenseni*, *Daptonema rectangulatum*, *Metalinhomoeus parafiliformis*, *Leptolaimus puccinelliae*, *Diplolaimelloides oschei*, *Leptolaimus sebastiani*, *Metalinhomoeus gloriae*, *Thalassomonhystera parva*, *Metalinhomoeus typicus*, *Haliplectus salicornius*.

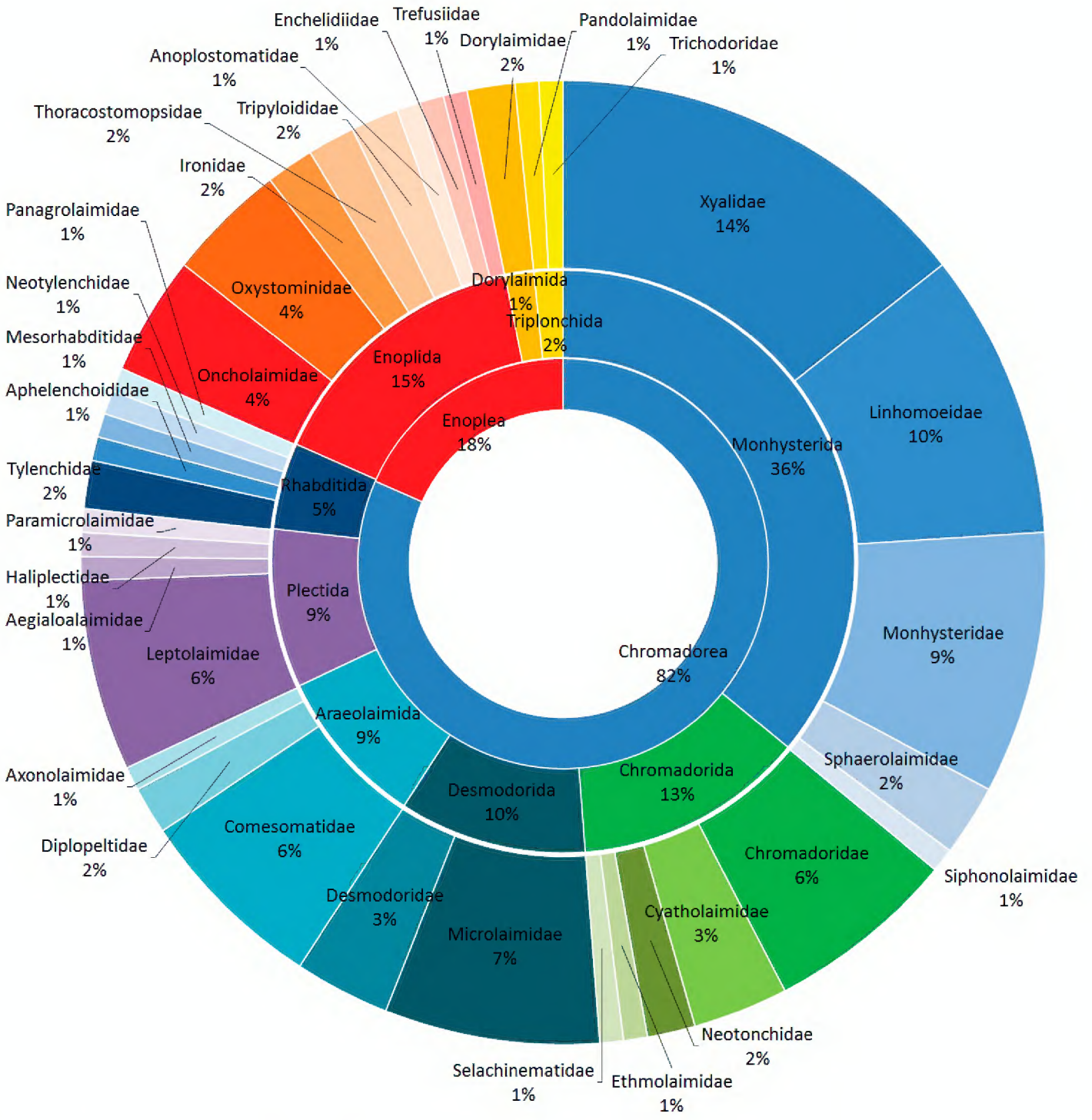

Figure 1. Taxonomic coverage by class, order and family.

Spatial coverage

General spatial coverage: San Julián Bay, Santa Cruz Province, Argentina (Figure 2). For this study three sites were selected: "La pingüinera"(M), at the bay entrance, "La Rural" (C) in front of San Julián city and "El Rincón" (E) at the end of the bay. At each sampling site, three tidal levels were chosen: upper-littoral, high tide, salt-marsh habitat (u); middle littoral, mean tide, un-vegetated habitat (m) and low littoral, low tide, un-vegetated habitat (l) (Figure 3).

Coordinates: La pingüinera: Mu = 49°16'15.24"S; 67°42'40.68"W; Mm = 49°16'12"S; 67°42'43.92"W; Ml = 49°16'11.28"S; 67°42'39.6"W. La Rural: Cu = 49°18'37.44"S; 67°42'55.8"W; Cm = 49°18'34.92"S; 67°42'55.8"W; Cl = 49°18'35.28"S; 67°42'52.56"W. El Rincón: Eu = 49°21'18.72"S; 67°41'26.88"W; Em = 49°21'14.4"S; 67°41'42.36"W; El = 49°21'18"S; 67°41'51"W.

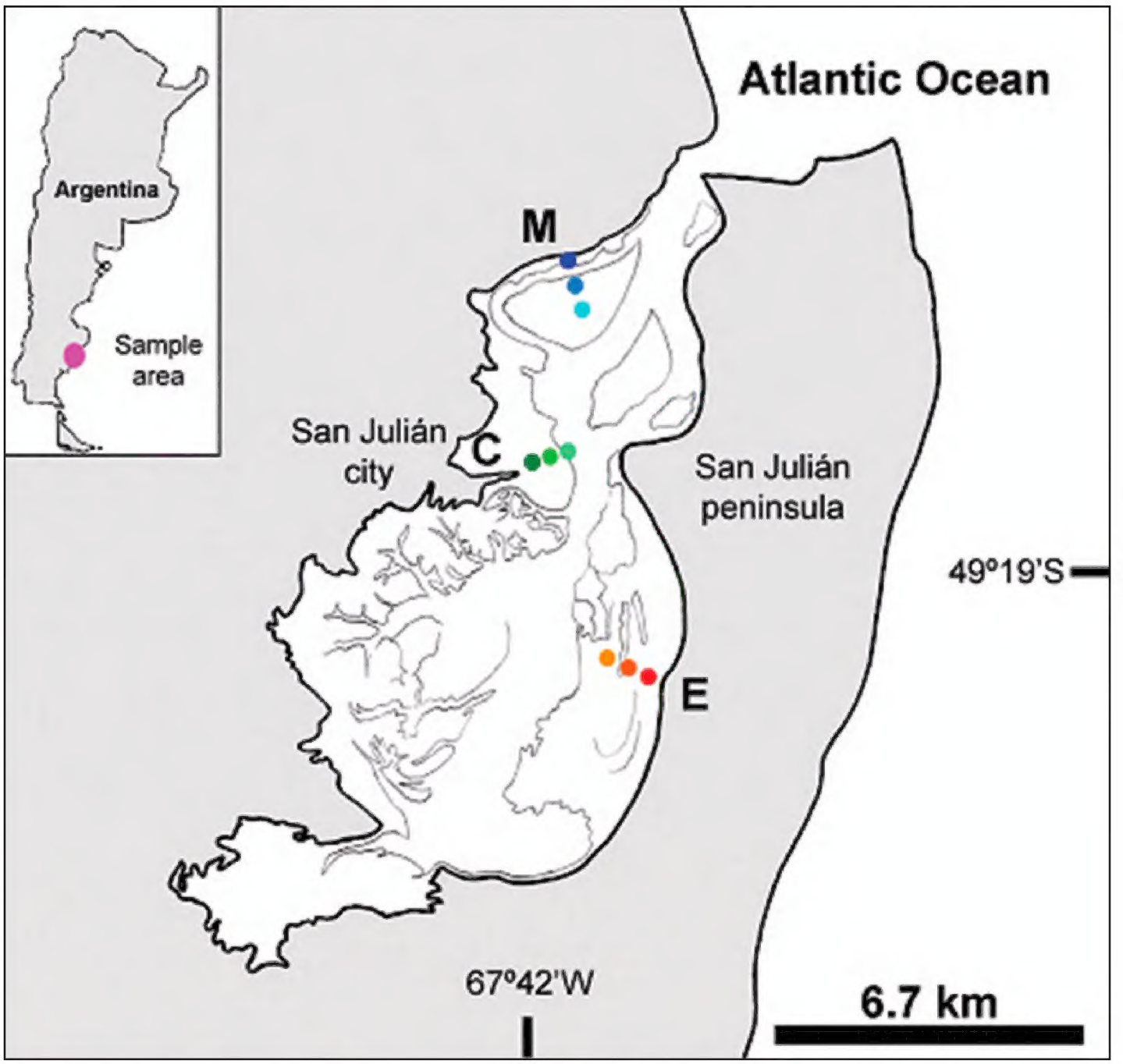

Figure 2. Spatial coverage. San Julián Bay, Argentina. Sites: M = "La pingüinera", C = "La Rural", E = "El Rincón". Levels = u, m, i.

Temporal coverage

11–13 January 2009.

Methods

Sampling description: At each site and level location, four replicates (20 ml) were sampled with a PVC syringe (60 ml, inner diameter 2.9 cm) and separated by a distance of 5-10 m each: four for marine nematodes counts, two for organic matter and two for sediment analyses. Each sample was fixed *in situ*, with a solution of 5% formaldehyde in filtered sea water with the addition of Rose Bengal tint.

Marine nematodes were extracted from samples using the elutriation/decantation LUDOX TM (colloidal silica polymer) method at a specific gravity of 1.15, quan-

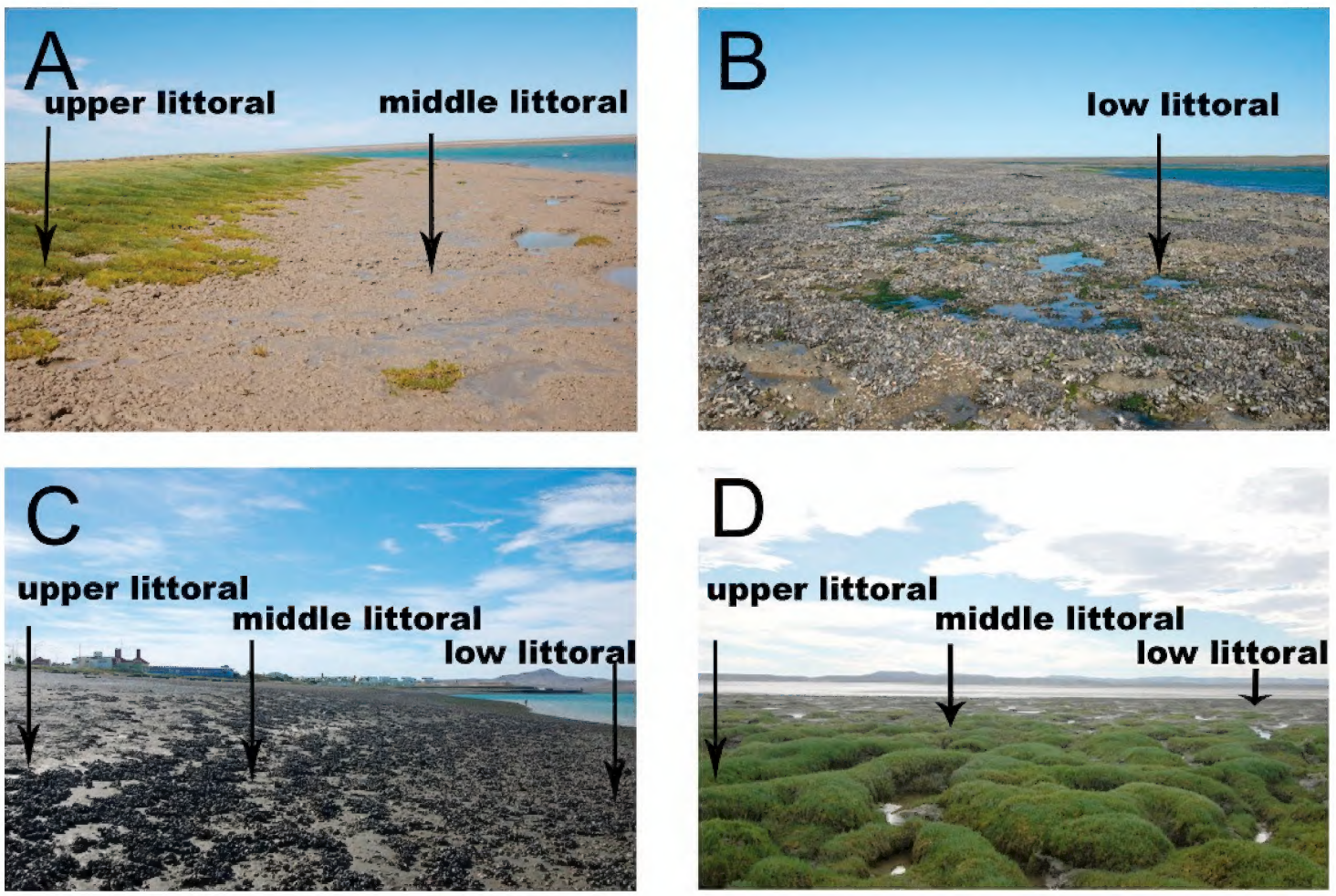

Figure 3. San Julián Bay, Argentina. Views from the sampling sites. **A, B** "La pingüinera" (M) **C** "La Rural"(C) **D** "El Rincón" (D).

tifying only organisms passing through a 500 μm mesh and then retained by a 63 μm mesh. Samples were evaporated to anhydrous glycerol and permanent slides made (Somerfield and Warwick 1996).

The taxonomic classification followed proposed by De Ley and Blaxter (2004). For the identification of species international keys (Platt and Warwick 1983, Platt and Warwick 1988, Warwick et al. 1998, Lorenzen 1994, Abebe et al. 2006) and previous taxonomical papers for Santa Cruz nematodes (Pastor de Ward 1978, 1980, 1984a, b, c, d, e, 1985, 1986, 1988, 1989, 1990, 1991, 1993, 1994, 1995a, b, 1996, 1998a, b, c, 1999, Pastor de Ward and Lo Russo 2009, Villares and Pastor de Ward 2012, Villares et al. 2013, Pastor de Ward et al. 2013) were used.

Project details

Project title: "*Evaluación del impacto urbano en costas areno-limosas de la provincia de Santa Cruz, usando métodos rápidos de análisis de cambios en estructura comunitaria del bentos.*" [Impact assessment in urban sand-clay coastal areas of Santa Cruz Province, using methods of rapid assessment in changes of nematodes community structure].

Personnel: Catalina Pastor de Ward (Project Director, meio-benthos specialist); Héctor Zaixso (Project Co-director, macro-benthos specialist), Virginia Lo Russo (Field work, nematodes identification, data collection and analysis), Gabriela Villares (Data

collection and analysis), Viviana Milano (Grant student, data input), Lidia Miyashiro (Darwin core data input), Renato Mazzanti (Software engineer, data base manager).

Funding: PICT AGENCIA-FONCYT 2/33345-2005

Study extent description: The San Julián Bay marine nematodes is a dataset that gives new insights on the taxonomic and geographic distribution of south Atlantic marine nematodes, covering an under-explored region of the southern Atlantic coasts. This is the first study on marine nematodes in this locality. This dataset presents species occurrences and species richness of the individual free-living marine nematodes present at three coastal areas (La pingüinera; La Rural; El Rincón) of the San Julián Bay at three different tidal levels (upper, middle and low-littoral).

In total 10,030 specimens of free-living marine nematodes belonging to 2 classes, 9 orders, 35 families, 78 genera and 125 species were collected.

Genera and species	Family	Order	Class
Odontophora peritricha Wieser, 1956	Axonolaimidae	Araeolaimida	Chromadorea
Hopperia americana Pastor de Ward, 1984	Comesomatidae	Araeolaimida	Chromadorea
Hopperia arntzi Chen & Vincx, 1998	Comesomatidae	Araeolaimida	Chromadorea
Laimella sp. 1	Comesomatidae	Araeolaimida	Chromadorea
Laimella sp. 2	Comesomatidae	Araeolaimida	Chromadorea
Sabatieria sp. 1	Comesomatidae	Araeolaimida	Chromadorea
Sabatieria sp. 2	Comesomatidae	Araeolaimida	Chromadorea
Sabatieria mortenseni (Ditlevsen, 1921)	Comesomatidae	Araeolaimida	Chromadorea
Sabatieria wieseri Platt, 1985	Comesomatidae	Araeolaimida	Chromadorea
Campylaimus gerlachi Timm, 1961	Diplopeltidae	Araeolaimida	Chromadorea
Campylaimus sp. 1	Diplopeltidae	Araeolaimida	Chromadorea
Chromadora nudicapitata Bastian, 1865	Chromadoridae	Chromadorida	Chromadorea
Chromadorella circumflexa Wieser, 1954	Chromadoridae	Chromadorida	Chromadorea
Prochromadora argentinensis Pastor de Ward, 1984	Chromadoridae	Chromadorida	Chromadorea
Dichromadora sp. 1	Chromadoridae	Chromadorida	Chromadorea
Neochromadora lineata Pastor de Ward, 1985	Chromadoridae	Chromadorida	Chromadorea
Neochromadora papillosa Pastor de Ward, 1985	Chromadoridae	Chromadorida	Chromadorea
Neochromadora sp. 1	Chromadoridae	Chromadorida	Chromadorea
Spilophorella paradoxa (De Man, 1888)	Chromadoridae	Chromadorida	Chromadorea
Marylynnia quadriseta (Wieser, 1954)	Cyatholaimidae	Chromadorida	Chromadorea
Paracanthonchus longispiculum Pastor de Ward, 1985	Cyatholaimidae	Chromadorida	Chromadorea
Paracyatholaimus chilensis Gerlach, 1953	Cyatholaimidae	Chromadorida	Chromadorea
Pomponema tautraense (Allgén, 1933)	Cyatholaimidae	Chromadorida	Chromadorea
Paraethmolaimus dahli (Gerlach, 1953)	Ethmolaimidae	Chromadorida	Chromadorea
Gomphionema sp. 1	Neotonchidae	Chromadorida	Chromadorea
Neotonchus sp. 1	Neotonchidae	Chromadorida	Chromadorea
Halichoanolaimus ovalis Ditlevsen, 1921	Selachinematidae	Chromadorida	Chromadorea
Molgolaimus minutus Jensen, 1978	Desmodoridae	Desmodorida	Chromadorea
Molgolaimus sp. 1	Desmodoridae	Desmodorida	Chromadorea
Polysigma sp. 1	Desmodoridae	Desmodorida	Chromadorea
Spirinia septentrionalis (Cobb, 1914)	Desmodoridae	Desmodorida	Chromadorea
Bolbolaimus sp. 1	Microlaimidae	Desmodorida	Chromadorea
Bolbolaimus sp. 3	Microlaimidae	Desmodorida	Chromadorea

Genera and species	Family	Order	Class
Microlaimus capillaris Gerlach, 1957	Microlaimidae	Desmodorida	Chromadorea
Microlaimus conothelis (Lorenzen, 1973)	Microlaimidae	Desmodorida	Chromadorea
Microlaimus cyatholaimoides Gerlach, 1957	Microlaimidae	Desmodorida	Chromadorea
Microlaimus decoratus Pastor de Ward, 1991	Microlaimidae	Desmodorida	Chromadorea
Microlaimus gerlachi Wieser, 1954	Microlaimidae	Desmodorida	Chromadorea
Microlaimus globiceps De Man, 1880	Microlaimidae	Desmodorida	Chromadorea
Microlaimus sp. 1	Microlaimidae	Desmodorida	Chromadorea
Desmolaimus sp. 1	Linhomoeidae	Monhysterida	Chromadorea
Desmolaimus sp. 2	Linhomoeidae	Monhysterida	Chromadorea
Metalinhomoeus gloriae Pastor de Ward, 1989	Linhomoeidae	Monhysterida	Chromadorea
Metalinhomoeus parafiliformis Pastor de Ward, 1989	Linhomoeidae	Monhysterida	Chromadorea
Metalinhomoeus typicus De Man, 1907	Linhomoeidae	Monhysterida	Chromadorea
Terschellingia distalamphida Juario, 1974	Linhomoeidae	Monhysterida	Chromadorea
Terschellingia longicaudata De Man, 1907	Linhomoeidae	Monhysterida	Chromadorea
Terschellingia sp. 1	Linhomoeidae	Monhysterida	Chromadorea
Terschellingia sulfidrica Pastor de Ward, 1989	Linhomoeidae	Monhysterida	Chromadorea
Paralinhomoeus aridus Pastor de Ward, 1989	Linhomoeidae	Monhysterida	Chromadorea
Paralinhomoeus pachyamphis Wieser, 1956	Linhomoeidae	Monhysterida	Chromadorea
Paralinhomoeus visitus Pastor de Ward, 1989	Linhomoeidae	Monhysterida	Chromadorea
Siphonolaimus auratus Wieser, 1956	Siphonolaimidae	Monhysterida	Chromadorea
Diplolaimella gerlachi Pastor de Ward, 1984	Monhysteridae	Monhysterida	Chromadorea
Diplolaimelloides oschei Meyl, 1954	Monhysteridae	Monhysterida	Chromadorea
Diplolaimelloides tehuelchus Pastor de Ward & Lo Russo, 2009	Monhysteridae	Monhysterida	Chromadorea
Diplolaimelloides warwicki Pastor de Ward & Lo Russo, 2009	Monhysteridae	Monhysterida	Chromadorea
Halomonhystera disjuncta (Bastian, 1865)	Monhysteridae	Monhysterida	Chromadorea
Halomonhystera sp. 1	Monhysteridae	Monhysterida	Chromadorea
Halomonhystera sp. 2	Monhysteridae	Monhysterida	Chromadorea
Halomonhystera sp. 3	Monhysteridae	Monhysterida	Chromadorea
Thalassomonhystera parva (Bastian, 1865)	Monhysteridae	Monhysterida	Chromadorea
Thalassomonhystera refringens (Bresslau & Stekhoven, 1935)	Monhysteridae	Monhysterida	Chromadorea
Sphaerolaimus pacificus Allgen 1947	Sphaerolaimidae	Monhysterida	Chromadorea
Sphaerolaimus pentasetus Pastor de Ward, 1984	Sphaerolaimidae	Monhysterida	Chromadorea
Subsphaerolaimus sp. 1	Sphaerolaimidae	Monhysterida	Chromadorea
Amphimonhystera sp. 1	Xyalidae	Monhysterida	Chromadorea
Daptonema concordiense Pastor de Ward, 1985	Xyalidae	Monhysterida	Chromadorea
Daptonema laxus Wieser, 1956	Xyalidae	Monhysterida	Chromadorea
Daptonema lopezi Pastor de Ward, 1985	Xyalidae	Monhysterida	Chromadorea
Daptonema rectangulatum Pastor de Ward, 1985	Xyalidae	Monhysterida	Chromadorea
Daptonema sp. 1	Xyalidae	Monhysterida	Chromadorea
Linhystera longa Pastor de Ward, 1985	Xyalidae	Monhysterida	Chromadorea
Metadesmolaimus sp. 1	Xyalidae	Monhysterida	Chromadorea
Metadesmolaimus sp. 2	Xyalidae	Monhysterida	Chromadorea
Paramonohystera megacephala (Steiner, 1916)	Xyalidae	Monhysterida	Chromadorea
Paramonohystera parabutschlii Timm, 1961	Xyalidae	Monhysterida	Chromadorea
Paramonohystera sp. 1	Xyalidae	Monhysterida	Chromadorea
Paramonohystera sp. 2	Xyalidae	Monhysterida	Chromadorea
Paramonohystera sp. 3	Xyalidae	Monhysterida	Chromadorea
Pseudosteineria anticipans Wieser, 1956	Xyalidae	Monhysterida	Chromadorea

Genera and species	Family	Order	Class
Steineria pilosa Cobb, 1914	Xyalidae	Monhysterida	Chromadorea
Theristus modicus Wieser , 1956	Xyalidae	Monhysterida	Chromadorea
Theristus sp. 1	Xyalidae	Monhysterida	Chromadorea
Haliplectus salicornius Pastor de Ward, 1984	Haliplectidae	Plectida	Chromadorea
Cyartonema flexile Cobb, 1920	Aegialoalaimidae	Plectida	Chromadorea
Camacolaimus barbatus Warwick, 1970	Leptolaimidae	Plectida	Chromadorea
Deontolaimus papillatus De Man, 1880	Leptolaimidae	Plectida	Chromadorea
Antomicron alveolatum Villares & Pastor de Ward, 2012	Leptolaimidae	Plectida	Chromadorea
Leptolaimoides sp. 1	Leptolaimidae	Plectida	Chromadorea
Leptolaimoides sp. 2	Leptolaimidae	Plectida	Chromadorea
Leptolaimus gabinoi Villares & Pastor de Ward, 2012	Leptolaimidae	Plectida	Chromadorea
Leptolaimus puccinelliae Gerlach, 1959	Leptolaimidae	Plectida	Chromadorea
Leptolaimus sebastiani Vitiello, 1974	Leptolaimidae	Plectida	Chromadorea
Paramicrolaimus spirulifer Wieser, 1959	Paramicrolaimidae	Plectida	Chromadorea
Mesorhabditis sp. 1	Mesorhabditidae	Rhabditida	Chromadorea
Aphelenchoides sp. 1	Aphelenchoididae	Rhabditida	Chromadorea
Panagrolaimus sp. 1	Panagrolaimidae	Rhabditida	Chromadorea
Boleodorus sp. 1	Neotylenchidae	Rhabditida	Chromadorea
Tylenchorhynchus sp. 1	Tylenchidae	Rhabditida	Chromadorea
Tylenchus sp. 1	Tylenchidae	Rhabditida	Chromadorea
Dorylaimus sp. 1	Dorylaimidae	Dorylaimida	Enoplea
Eudorylaimus sp. 1	Dorylaimidae	Dorylaimida	Enoplea
Chaetonema sp. 1	Anoplostomatidae	Enoplida	Enoplea
Thoracostomopsis sp. 1	Thoracostomopsidae	Enoplida	Enoplea
Dolicholaimus marioni De Man, 1888	Ironidae	Enoplida	Enoplea
Syringolaimus smarigdus Cobb, 1928	Ironidae	Enoplida	Enoplea
Halalaimus (Halalaimus) setosus Timm, 1961	Oxystominidae	Enoplida	Enoplea
Halalaimus (Nuada) diacros Mawson, 1958	Oxystominidae	Enoplida	Enoplea
Halalaimus sp. 3	Oxystominidae	Enoplida	Enoplea
Halalaimus floridanus Keppner, 1992	Oxystominidae	Enoplida	Enoplea
Thalassoalaimus sp. 1	Oxystominidae	Enoplida	Enoplea
Wieseria sp. 1	Oxystominidae	Enoplida	Enoplea
Calyptronema maxweberi (De Man, 1922)	Enchelidiidae	Enoplida	Enoplea
Eurystomina sp. 1	Enchelidiidae	Enoplida	Enoplea
Adoncholaimus sp. 1	Enchelidiidae	Enoplida	Enoplea
Oncholaimellus paracarlbergi Pastor de Ward, 1993	Oncholaimidae	Enoplida	Enoplea
Viscosia macramphida Chitwood, 1951	Oncholaimidae	Enoplida	Enoplea
Viscosia separabilis (Wieser, 1953)	Oncholaimidae	Enoplida	Enoplea
Oncholaimus salobrus Pastor de Ward, 1993	Oncholaimidae	Enoplida	Enoplea
Rhabdocoma sp. 1	Trefusiidae	Enoplida	Enoplea
Bathylaimus australis Cobb, 1894	Tripyloididae	Enoplida	Enoplea
Tripyloides amazonicus (Gerlach, 1957)	Tripyloididae	Enoplida	Enoplea
Trichodorus sp. 1	Trichodoridae	Triplonchida	Enoplea
Pandolaimus sp. 1	Pandolaimidae	Triplonchida	Enoplea

Quality control description: The geo-referencing of all specimens were recorded using a Garmin eTrex Legend GPS (WGS84 Datum) with an accuracy of less than 10 m and with at least 5 satellites.

The taxonomic identification of specimens, scientific names, and their current accurate spelling were verified by C. Pastor de Ward, a free-living marine nematode specialist. Other post-validation procedures (including geographic coordinate format, congruence between collection and identification dates, absence of ASCII anomalous characters) were checked using the Darwin Test software (http://www.gbif.es/darwin_test/Darwin_Test_in.php).

Dataset description

Object name: Darwin Core Archive free-living marine Nematodes from San Julián Bay (Santa Cruz, Argentina)
Character encoding: UTF-8
Format name: Darwin Core Archive format
Format version: 1.0
Distribution: http://www.cenpat-conicet.gov.ar:8080/ipt-2.0.3/resource.do?r=sjnem
Publication date of data: 2013-10-17
Language: English
Licenses of use: This work is licensed under a Creative Commons CC0 1.0 License http://creativecommons.org/publicdomain/zero/1.0/legalcode

External datasets

Object name: Centro Nacional Patagónico (CENPAT-CONICET)
Distribution: http://www.cenpat-conicet.gov.ar:8080/ipt-2.0.3/resource.do?r=sjnem

Object name: Ministerio de Ciencia y Tecnología de Argentina (Sistema Nacional de Datos Biológicos - SNDB)
Distribution: GBIF: http://www.gbif.org/dataset/06df03fc-8973-490c-af74-089ff-fae9e24
Formatted: English (U.K.)
Field Code Changed
Metadata language: English
Date of metadata creation: 2013-10-17
Hierarchy level: Dataset

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References

Abebe E, Andrássy I, Traunspurger W (2006) Freshwater nematodes: ecology and taxonomy. CABI Publishing, Wallingford, United Kingdom, 752 pp.

De Ley P, Blaxter M (2004) A new system for Nematoda: combining morphological characters with molecular trees, and translating clades into ranks and taxa. Nematology Monographs and Perspectives 2: 633–653.

Lorenzen S (1994) The Phylogenetic Systematics of Freeliving Nematodes. The Ray Society, Surrey, United Kingdom, 383 pp.

Pastor de Ward CT (1978) Free-living marine nematodes (Subclass Adenophorea) of the ría Deseado (Santa Cruz, Argentina). Systematic Contributions I. Annales Soc. r. Zool. Belg. 108, fasc. 1-2: 29–45.

Pastor de Ward CT (1980) *Aponema papillatum* sp. nov. nueva especie de nematodo marino de Puerto Deseado, Argentina. Contribuciones Científicas del CIBIMA Nro. 160: 3-11.

Pastor de Ward CT (1984a) Tres especies nuevas de nematodos marinos de vida libre (Chromadoridae y Comesomatidae) para la ría Deseado, Santa Cruz, Argentina. Physis A 42: 39–48.

Pastor de Ward CT (1984b) Nematodos marinos de la ría Deseado (Leptolaimina: Leptolaimidae, Haliplectidae) Santa Cruz, Argentina. I. Physis A 42: 87–92.

Pastor de Ward CT (1984c) Nematodos marinos de la ría Deseado (Monhysteroidea: Sphaerolaimidae, Monhysteridae), Santa Cruz, Argentina. 3. Contribuciones del Centro Nacional Patagónico Nro. 85: 1–15.

Pastor de Ward CT (1984d) Nematodos marinos de la ría Deseado (Axonolaimoidea: Axonolaimidae, Diplopeltidae, Comesomatidae) Santa Cruz, Argentina. 4. Contribuciones del Centro Nacional Patagónico Nro. 86: 1–21.

Pastor de Ward CT (1984e) *Ptycholaimellus setosus* sp. nov., nueva especie de nematodo marino de vida libre (Chromadoridae, Hypodontolaiminae) de Puerto Deseado, Santa Cruz, Argentina. Neotropica 30: 11–18.

Pastor de Ward CT (1985) Nematodos marinos de la ría Deseado (Monhysteroidea: Xyalidae), Santa Cruz, Argentina, 2. Physis A 43: 113–130.

Pastor de Ward CT (1986) Free-living marine nematodes of the Deseado river estuary (Chromadoroidea: Chromadoridae, Ethmolaimidae, Cyatholaimidae and Choniolaimidae) Santa Cruz, Argentina. 5. Publicación Especial del Centro Nacional Patagónico Nro. 6: 1–83.

Pastor de Ward CT (1987) Aporte al conocimiento de los nematodos libres marinos de la ría Deseado y áreas vecinas de la provincia de Santa Cruz, Argentina. Doctoral thesis Universidad Nacional de Buenos Aires, 565 pp.

Pastor de Ward CT (1988) nematodos marinos de la ría Deseado (Desmodoroidea: Desmodoridae, Draconematidae) Santa Cruz, Argentina 7. Physis A 46: 61–72.

Pastor de Ward CT (1989) Free-living marine nematodes of the Deseado River estuary (Siphonolaimoidea: Siphonolaimidae, Linhomoeidae) Santa Cruz, Argentina, 6. Studies on Neotropical Fauna and Environment 24: 231–247.

Pastor de Ward CT (1991) Nematodes marinos de la ría Deseado (Microlaimoidea: Microlaimidae, Monoposthiidae), Santa Cruz, Argentina, 8. Physis A 47: 1–12.

Pastor de Ward CT (1990) Nematodos marinos de la ría Deseado (Oncholaimoidea: Oncholaimidae), Santa Cruz, Argentina, 10. Physis A 48: 29–40.

Pastor de Ward CT (1991) Nematodos marinos de la ría Deseado (Oncholaimoidea: Enchelidiidae), Santa Cruz, Argentina, 11. Physis A 49: 27–39.

Pastor de Ward CT (1993) Nematodos marinos de vida libre de la ría Deseado (Tripyloidina, Tripyloididae), Santa Cruz, Argentina. 13. Naturalia Patagónica 1: 61–67.

Pastor de Ward CT (1995a) Free-living marine nematodes from Deseado river estuary (Ironoidea: Leptosomatidae, Thoracostomatidae). Santa Cruz, Argentina. 12. Spixiana 18: 201–209.

Pastor de Ward CT (1995b) Nematodos marinos de la ría Deseado (Enoploidea), Santa Cruz, Argentina. 14. Physis A 50: 13–20.

Pastor de Ward CT (1996) *Deontostoma* species from subantarctic coasts (Nematoda, Leptosomatidae). Hidrobiologia 315: 177–187. doi: 10.1007/BF00051948

Pastor de Ward CT (1998a) Distribución espacial de nematodos libres de la ría Deseado, Santa Cruz (Patagonia, Argentina). Revista de Biología Marina y Oceanografía 33: 291311.

Pastor de Ward CT (1998b) New free-living marine nematodos from Deseado river estuary (Ironoidea: Oxystominidae) Santa Cruz, Argentina. XV. Physis A 56: 1–6.

Pastor de Ward CT (1998c) Nematodos marinos de la ría Deseado (Desmodoroidea: Desmodoridae, Draconematidae), Santa Cruz, Argentina. VII. Physis A 46: 61–72.

Pastor de Ward CT (1999) The structure of the genital apparatus in Nematoda (Chromadoroidea) from South Atlanctic Coasts. Physis A 57: 47–54.

Pastor de Ward CT, Lo Russo V (2009) Distribution of *Diplolaimella* and *Diplolaimelloides* species from Patagonian lagoons and coastal waters (Nematoda: Monhysteridae), Chubut and Santa Cruz provinces. Journal of the Marine Biological Association of the United Kingdom 89: 711–718. doi: 10.1017/S0025315409000198

Pastor de Ward CT, Lo Russo V, Villares G, Martelli A (2013) Three new species of the free-living nematode genus *Oncholaimus* Dujardin, 1845 (Enoplida, Oncholaimidae) from Atlantic coasts of Argentina. Journal of Morphology and Systematics (Jaen) 16: 131–141.

Platt H, Warwick RM (1983) Free-living Marine Nematodes. Part I. British Enoplids. Synopses of British Fauna (New Series) N°28, Barnes, Crothers, Cambridge University Press, 307 pp.

Platt H, Warwick RM (1988) Free-living Marine Nematodes. Part II. British Chromadorids. Synopses of British Fauna (New Series) N°38, Barnes, Crothers, Cambridge University Press, 499 pp.

Somerfield PJ, Warwick RM (1996) Meiofauna in marine pollution monitoring programmes. A laboratory manual. Ministery of Agriculture, Fisheries and Food, Directorate of Fisheries Research, Lowestoft, 71 pp.

Warwick RM, Platt H, Somerfield PJ (1998) Free-living Marine Nematodes. Part III. Monhysterids. Synopses of British Fauna (New Series) N°53, Barnes, Crothers, Cambridge University Press, 296 pp.

Lo Russo (2012) Comparación de comunidades de nematodos de marismas de San Antonio Oeste (río Negro) y San Julián (Sta. Cruz). Doctoral thesis Universidad Nacional del COMAHUE, 214 pp.

Villares G, Pastor de Ward CT (2012) New species of *Antomicron* and *Leptolaimus* (Nematoda: Leptolaimidae) and record of *Procamacolaimus* (Nematoda: Camacolaimidae) from Patagonia coast, Chubut and Santa Cruz, Argentina. Journal of the Marine Biological Association of the United Kingdom 92: 929–939. doi: 10.1017/S0025315411000269

Villares G, Martelli A, Lo Russo V, Pastor de Ward C (2013) Three new species and one new record of *Campylaimus* (Diplopeltidae, Nematoda) from Argentine coasts (Buenos Aires and Santa Cruz, Argentina). Zootaxa 3613: 083–096. doi: 10.11646/zootaxa.3613.1.4